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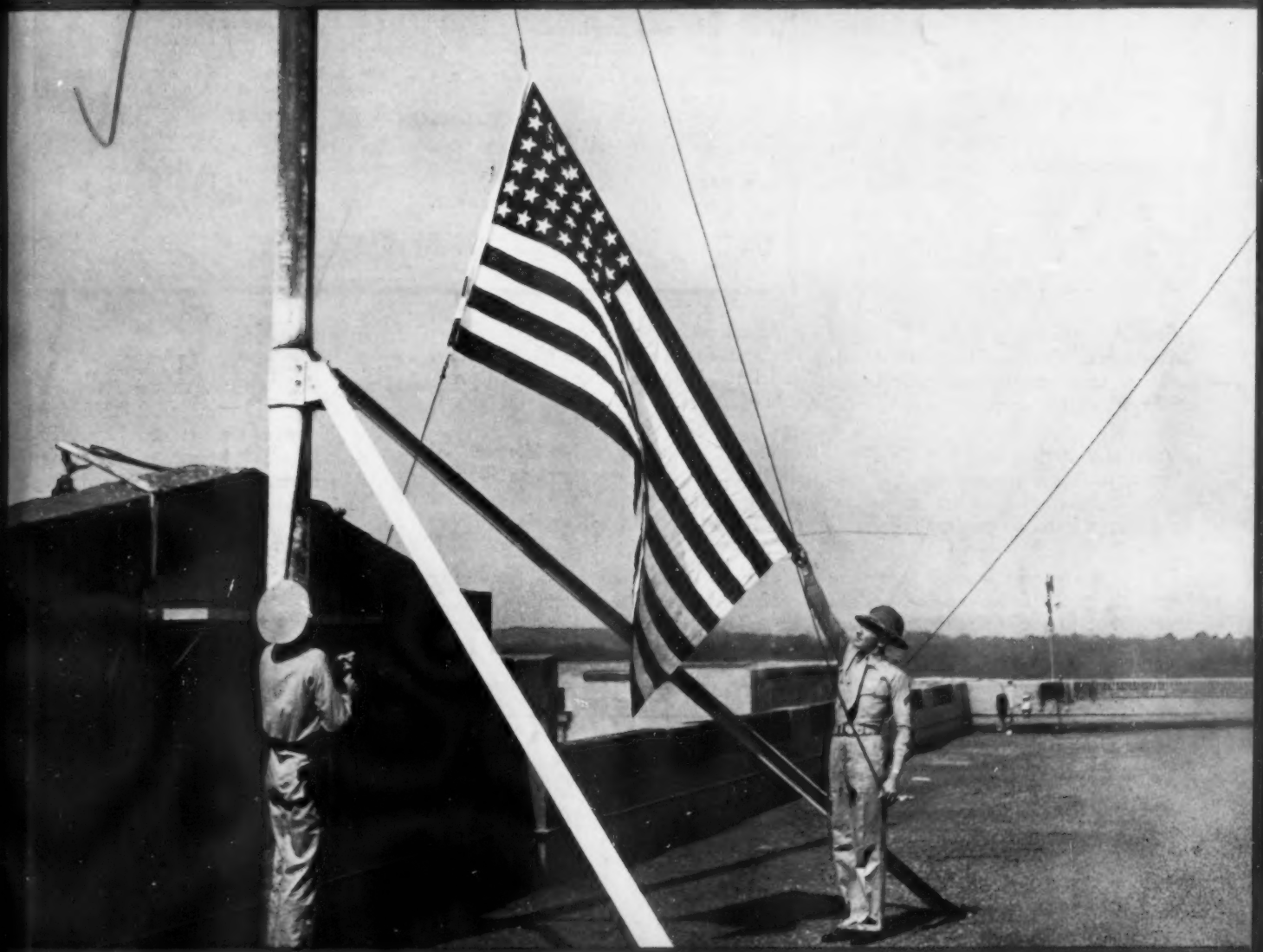
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • JULY 3, 1943



Flag Over Science

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A SCIENCE SERVICE PUBLICATION

Do You Know?

Zinc production in Oklahoma, Kansas and Missouri was not seriously affected by the recent floods.

Over 20,000 acres of *scenic lands* were recently added to Olympic National Park, Washington, by presidential proclamation.

Wine-grape seeds contain from 10% to 17% oil; a process for extracting it has been developed by a University of California professor.

From 100 pounds of *milkweed seeds,* 21 pounds of oil may be extracted; the oil, chemically similar to soybean oil, can be made edible.

A Flying Fortress, fitted as an *aerial classroom,* has been placed in service for specialized pilot training by the Second Army Air Force.

Corn was primarily a food for man at the time of the colonization of America; now man consumes directly but a small part of the crop.

Vocational high school boys in Pennsylvania have constructed several hundred electric *chick-brooders* to relieve the shortage faced by poultry raisers.

Victory gardeners whose gardens were destroyed by the floods are advised to replant; but to replant with crops that can still be planted in their normal season.

American farmers grow *flax* chiefly for seed, not for fiber; linseed oil, salad oils, and linseed meal are the principal products of the seed.

Shrub Lespedeza, a legume of the lespedeza family, grows to six feet in height and is being increasingly used in gulleys to prevent soil erosion.

Over 650 acres of rubber-producing *goldenrod* have been planted by the U. S. Department of Agriculture in scattered areas to determine the best soil types and locations.

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Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

Marginal Note

➤ SCIENCE NEWS LETTER appears in new battle dress with this issue, the first of a new volume. Long before paper economies were enforced by WPB regulations, we did many of the things that other magazines have done during the past six months. Now we remove the margins in order to use less paper and postpone the day when we shall have to say to subscription applicants: "Sorry, we'll have to put you on the waiting list." Readers should note that nothing has been sacrificed except the empty margins. The type page size is the same.

SCIENCE NEWS LETTER

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NUTRITION

Wheat Protein Saved

A billion pounds of body-building protein can be recovered as a by-product from alcohol distillation. May be used as meat substitute or for chemical products.

➤ "MEAT" SANDWICHES without visible meat but rich in body-building proteins may result from a new process developed by chemists of the U. S. Department of Agriculture. A billion pounds of protein could thus be recovered annually by alcohol distillation from wheat.

Equipment has already been designed for commercial production based on the process developed by Irwin W. Tucker, a young chemist working under Dr. A. K. Balls, chief of the Department's enzyme research laboratory.

Wheat is treated with sodium sulphite solution, a plentiful waste product of paper mills and other industries. The extracted protein clots and rises to the surface as a thick, yellow froth. When dried it looks very much like dried egg white.

The protein is suitable for human consumption, especially when granular flour is used in the process. Its cost would be only about five cents a pound. Some look for the protein enrichment of bread, which would help make up for meat supplies that have been cut nearly in half. Cereal products could be similarly treated. Essential chemical products, such as casein, are also possibilities.

Meanwhile, distillers expect to use the solution that is left after the protein separation to replace barley malt, now the most expensive single ingredient of the alcohol distillation process. This, together with the protein by-product, will save the government $50,000,000 on the 500,000,000 gallons of war alcohol being bought from distillers annually.

After the war we may look forward to large-scale production of grain alcohol for synthetic rubber and other industrial products. Fully developed, the new process will cut former prohibitive costs of peacetime grain alcohol production by at least half. Some say it will pay for the production of the alcohol and then debate as to whether the protein or the alcohol is the by-product.

AMPHIBIOUS—Transport glider, America's newest invasion weapon, was made for the U. S. Navy of molded plywood and other non-strategic materials by Allied Aviation Corporation.

Production problems will also be solved by the Balls-Tucker discovery. Sticky gluten, extracted by the new process, has been gumming up distillation equipment, thereby forcing frequent shutdowns.

In addition, the process reduces the distillation residue to a thin liquid which is much easier to dispose of than former wastes.

Protein has heretofore been recovered at the end rather than at the beginning of distillation, and the product was good for little but livestock feed. The new, simpler process gives higher yields and the product is pure enough to be used in human food.

Science News Letter, July 3, 1943

ENGINEERING

Noted Boatbuilder Patents Amphibian Pontoon Bridge

➤ WHEN OUR ARMIES roll across the North German plain toward Berlin, it will do the reeling Nazi forces little good to demolish bridges over the many rivers of that rainy country. The Corps of Engineers can throw pontoon bridges across streams almost as fast as the field-gray *"Ingeneure"* can blow up the old ones.

They won't even have to unload pontoons from trucks and lay floors on them, if an amphibian bridge just patented by Andrew Jackson Higgins, noted New Orleans boatbuilder, comes into use by then. The new bridge consists of wheeled barges, that can be hauled overland behind a tractor like a string of freight cars. Arrived at the edge of a stream, the lead barge is hitched to a cable reel carried by an amphibian tank. The tank swims to the opposite shore, paying out the cable as it goes. When it gets firm footing on the opposite bank, it reels in the cable, drawing the bridge across the river.

As soon as the bridge is in place, engineer troops swarm out on it. They swing over hinged sections that have been lying on top of the barges and slip into place steel pins that hold them firmly in position. The width of the bridge is thus doubled, giving an eight-foot driveway in the middle and a four-foot walkway for infantry on either side; also serving as stabilizing outrigger floats. Folding plates bridge the gaps between the ends of the barges, and short chains prevent too much yield under heavy loads or the thrust of swift currents.

Science News Letter, July 3, 1943

PHYSICS—CHEMISTRY

Detect Flaws in Rubber

New apparatus uses supersonic waves to locate flaws in rubber tires in same way X-rays are employed to expose flaws in steel.

➤ FLAWS in rubber tires are detected by means of supersonic waves as flaws in steel are exposed by means of X-rays, in an apparatus demonstrated before visitors to the new Goodyear Research Laboratories in Akron, Ohio. Supersonic waves, which are sound waves far above the frequencies audible to human hearing, are transmitted through water against the sides of a tire which is rolled slowly through the trough. A microphone picks up the waves passing through the rubber.

As long as the structure is solid, the waves come through, and the amplified current from the microphone keeps a green lamp lighted. If a flaw breaks the continuity of the waves, the current is switched over and a warning red light is flashed.

Science News Letter, July 3, 1943

New Vulcanizable Plastic

➤ PLIOFLEX, a rubber substitute that can be vulcanized, was announced at the opening of the new laboratories. It is a polyvinal plastic, like many of the rubber-like substances at present on the market, but unlike them is resistant to the softening at high temperatures and stiffening in cold that limit their usefulness.

Tensile strength of the new substance can be increased from 100 to 200 per cent during vulcanization. The process can be carried on with the same machinery now used in vulcanizing rubber, and by very nearly the same procedure, so that extensive retraining of personnel is not needed.

Plioflex is expected to be useful through a very considerable range of applications, from automobile parts to shoe heels and soles, jar rings and impregnated fabrics. It will not appear on the civilian market, however, until after the war.

Science News Letter, July 3, 1943

Device Neutralizes Static

➤ STATIC, that eldest of radio-ruining gremlins, has finally been exorcised, it was announced at the dedicatory exercises. A new device, developed by Goodyear engineers and officially christened the radio static neutralizer, eliminates the disturbing atmospherics caused by lightning flashes and sparks from powerful electrical apparatus, that cause such annoying crashes and sputterings in radio programs and manifest themselves by black spots and streaks on radio-transmitted pictures.

The static neutralizer will be used for the present by the armed forces in improving communications between planes, ships, tanks and ground stations, in bettering the performance of radar, and in securing clearer transmission of military maps and reconnaissance photographs. After the war it will become available for use on civilian radio sets.

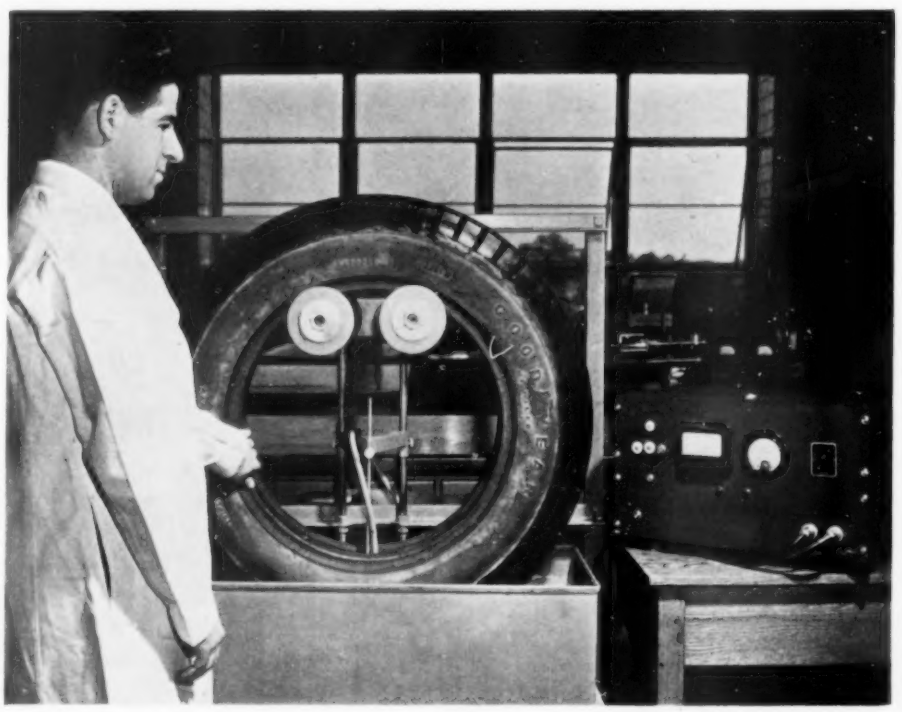
The neutralizer makes use of small electronic tubes, which are automatically adjusted to each radio signal, whether weak or strong. They discriminate between static and the desired signal, and automatically control the amount of static energy that can pass through the radio set. It also gets rid of static on the same frequency as the incoming signal, by means of a circuit that uses the energy of the static to build up an electronic current of opposite sign. This current then neutralizes the static so that it has no effect on the signal.

Science News Letter, July 3, 1943

Replaces Sponge Rubber

➤ ANOTHER CASE where a war necessitated "ersatz" material proves superior to its vanished predecessor was revealed at the dedicatory exercises. The bubbly rubber sponge much used for cushions, insulation and other purposes in pre-war days is now replaced by a new material known as plastic foam, which looks like packed snow and is claimed to be superior to the original rubber product. For one thing, it is lighter than balsa, as well as proof against fire and water, and so is well adapted for use in floats. Production at present is in limited quantities, and all that is being turned out goes into insulation for warplanes.

Science News Letter, July 3, 1943



TESTS TIRES—This new device uses supersonic vibrations, or sound waves, of high frequencies beyond the range of the human ear, to detect defects in automobile tires.

Explosives Need Brisance

➤ HIGH BRISANCE may become as familiar a term in this war as high octane has already become. It is the quality that makes the bazooka's little rocket projectiles so deadly even to the biggest German tanks.

Brisance made its bow to the American non-military public in an interview granted to the press by Maj. Gen. C. M. Barnes, chief of the technical division office of the chief of ordnance, a featured speaker at the dedication of the new Goodyear Research Laboratories.

Brisance is the suddenness with which an explosive acts as contrasted with its total power. Smokeless powder, for example, is powerful, but it is slow in action. Its brisance is low.

The still-secret explosive used in the bazooka's projectiles, on the contrary, has extremely high brisance; so high, indeed, that it only needs to burst outside even the thickest of tank armor to blast a hole in it, shooting white-hot tongues of flame through the opening to set off the tank's own ammunition supply and perhaps also its fuel tanks as well, and reducing the whole business to a fiery wreck. Gen. Barnes saw tanks to which that had happened on a recent tour in North Africa.

Gen. Barnes had high praise for the cooperation of American scientists, technologists and industrial leaders with the Army and Navy in developing new weapons since the beginning of the war crisis. As a single instance that had important effects in the African campaigns, he cited the rubber tank-tread blocks with which American tanks alone are equipped. The steel pins that link the elements of the track together are embedded in rubber so that nowhere does steel rub against steel. The destructive sand of the desert cannot cut these tracks to pieces as they did tracks of Axis tanks. The rubber-footed American weapons could therefore travel fast and far while their "opposite numbers" suffered frequent breakdowns.

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Rubber for Post-War Needs

➤ SYNTHETIC RUBBER is now beginning to be turned out in large enough quantities to meet the present emergency, and it is of good enough quality for present purposes, too. But it definitely is not good enough for a peaceful victorious America, and it will be a big job of post-war research to make it good enough.

Such improvement will be one of the undertakings of the new Goodyear Research laboratory, Dr. L. B. Sebrell, manager of research and new products for Goodyear, told the audience of scientists, industrialists and newspapermen gathered for the ceremonies.

In substantial agreement with him was Dr. R. P. Dinsmore, manager of the development department, reviewing progress of the synthetic rubber program to date.

Present-day synthetic rubbers do not have molecules of the same size and shape as natural rubber, which is the basic reason why they fail to come up to the tree product in many respects, Dr. Sebrell pointed out. Studies by X-ray have revealed this much, and further studies, with the more powerful X-ray and electron microscope equipment of the new laboratory are expected to show much more.

One difficulty with the synthetic rubber molecule, Dr. Sebrell mentioned, is its tendency to stick out branches while it is being combined with other molecules. Longer, straighter strings of atoms, forming molecules more like those of natural rubber, may be the ultimate answer.

But even though improvements are desirable and necessary, it is not to be inferred that American synthetic rubber is inferior.

"We believe," the speaker concluded, "that the type of rubber now being used in this country is equal or superior to that developed by any country in the world and that such development may, in time, make us independent so far as the supply of rubber is concerned."

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MEDICINE

Skin Grafting With Ice

Refrigeration anesthesia has been successfully used to banish pain when removing skin to be grafted in new place on the body.

➤ SUCCESSFUL USE of refrigeration anesthesia to banish pain during skin grafting operations is reported by Lieut. Harry E. Mock, Jr., of the U. S. Army Medical Corps (*Journal of the American Medical Association,* June 26).

Ice bags are tied or bandaged over the area from which the skin is to be taken. They are left in place for two hours. This chills the skin so thoroughly that it is completely insensitive to pain. The pain-deadened condition lasts for about 20 minutes after the ice bags are removed, giving the surgeon time to remove the skin which is then put in its new place and the wounds bandaged. The procedure is so simple that for small grafts the operation can be carried out in the patient's bed without having to use the operating room.

Only three of 27 patients felt anything with the refrigeration anesthesia. These three complained of a burning sensation when the graft was cut but it was not so acute that any other anesthetic had to be used.

In 23 of the 27 cases successful grafts were obtained. In the four failures, the cause was attributed to error in judgment about the extent of infection and not to the refrigeration anesthesia.

The idea for using ice bags instead of anesthesia to make skin grafting painless came from an observation in amputation cases. Refrigeration was also used in these cases. Some who have been using this method discovered that the pain of the tourniquet which has to be applied before amputation of an extremity was decreased by previously chilling the tissues with ice bags. Lieut. Mock and associates, corroborated this finding and noticed that the ice bags were completely anesthetizing the skin.

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ZOOLOGY

Baby Brazilian Tapir Born In D. C. Zoological Park

➤ THERE'S a new Brazilian tapir at the National Zoological park in Washington—a baby, born to a pair brought here from Rio de Janeiro in 1938. It differs strikingly from its parents in coat-color, being covered with spots; but these will disappear as it grows older, leaving it a uniform gray-brown like them.

Director William M. Mann made the new arrival welcome—because it belongs to an herbivorous species. "We're glad to have new animals so long as they're grass-eaters," he commented. "Meat-eaters we're not too keen about nowadays."

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FLYING NUN—The only Catholic Sister to hold a civilian pilot's license uses these model airplanes in teaching aeronautics at Catholic University this summer. Her students are in training to conduct high school pre-flight courses next fall.

AERONAUTICS

"Flying Nun" Will Teach Aeronautics at University

➤ SISTER M. Aquinas, O.S.F., the only American "flying nun" who holds a civilian pilot's license, will teach aeronautics at Catholic University in Washington this summer.

Sister Aquinas is a member of the Franciscan order. She wears the traditional habit of her order when she flies, and she says it gets less in her way when she is flying than when she scrubs floors.

Two courses will be given under the "flying nun's" direction. The first will be tuition-free and is given under the direction of the Civil Aeronautics Authority. Another, longer course will be a part of the regular summer session of the university. Both are intended to provide high school teachers with intensive instruction for teaching pre-flight areonautics classes.

Sister Aquinas is a university graduate in physics and is instructor in science and aeronautics at Ambrose High School in Ironwood, Mich.

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CONSERVATION—NUTRITION

Deplores Farming Evils

Food shortage may become permanent in America as destructive farming practices waste land through erosion, speaker warns at Conservation Conference.

➤ FOOD SHORTAGE may become a permanent, gaunt, unwelcome guest at the American table, instead of the fleeting specter it is now considered to be, if bad farming practices of the past are projected into the future. Such was the warning of Louis Bromfield, novelist-agriculturalist and vice president of Friends of the Land, before the meeting in Tar Hollow, Ohio, of the Second Annual Conference on Conservation, Nutrition and Human Health.

Farms increase in size and diminish in number from decade to decade, Mr. Bromfield pointed out, deploring the passing of the small farmer with his family-sized farm.

Factory methods on the farm, especially the practice of concentrating on the production of a single cash crop over wide sections, the speaker regarded as especially pernicious.

Mr. Bromfield also pointed out our national failure to replace our forests as fast as they are being depleted:

"This was largely a forest country and for more than a hundred years we have been cutting down forests recklessly, until now even the worst offenders, the lumber and paper-pulp industries, are alarmed over the fact that in a few more years their supply of raw material will largely have vanished. And this at a time when the uses of wood are supplanting metals, wool and other fundamentals to a degree which establishes what might be called a 'wood economy'.

"Worst of all, little effort has been made to restore our forests. We have only to look at Europe to realize the vital importance of trees, not only to peace but to wartime economy. . . . Forests require lifetimes to grow. They are not made over night."

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Humans Need Mineral Salts

➤ MINERAL SALTS in our food, mentioned nowadays in a rather vague and general kind of way, need to have far more specific attention, Maj. Zolton T. Wirtschafter, chief of the section of civilian medicine and industrial hygiene, Army Medical Corps, declared before the conference.

Current nutritional discussion gives great prominence to vitamins along with the older trilogy of carbohydrates, fats and proteins, but water and mineral requirements still receive only slight emphasis, the speaker pointed out. Yet for normal health the body needs some 15 distinct mineral elements. Moreover, for most of them its requirements are quantitatively very specific; too little of any given element will be followed by certain definite symptoms of ill health; too much of at least some of them will provoke other maladies.

Requirements for minerals change from age to age. Thus the unborn infant's tissues contain much more sodium than those of a newborn child, and more than twice as much as those of an adult. The bone-building elements calcium and phosphorus, on the other hand, are present in much smaller quantities in babies than in grownups.

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Iodine a Critical Mineral

➤ THE CRITICAL ROLE of iodine in human physiology was discussed by Dr. George M. Curtis of the Ohio State University. One ill that has been spared our enemies, the Japanese, almost altogether is goiter, he pointed out. This is because of their widespread use of seaweed as food; seaweed contains iodine which prevents the distressing swelling of the thyroid gland.

Although the goiter-preventing activity of iodine is perhaps its best known health-preserving effect, it is apparently necessary for the maintenance of normal bodily functions in a number of other less conspicuously marked ways, and even for the sustaining of good mental health.

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Soil for Human Nutrition

➤ GETTING MINERALS into the human system is a kind of chemico-biological triple play: soil to food to us.

Some of the striking effects of the proper "feeding" of the soil with needed minerals were discussed by R. H. Lush, pasture specialist of the National Fertilizer Association.

Not only does the proper application of minerals to the soil improve the quality of vegetable and animal foods derived from fields and pastures, it greatly increases their quantity as well, the speaker declared. Liberally fertilized pastures on one farm in Maine produced over 4,000 pounds of milk per acre compared to about 760 pounds of milk on the unfertilized native pasture. In another test, it was found that one pound of properly adjusted fertilizer was responsible for increased grass production sufficient to become eventually 24 pounds of milk or three pounds of beef.

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AGRICULTURE—ENGINEERING

Dehydrating Is Work

Housewives are warned that home food dehydration is designed to save food, not to minimize work, and that great care is necessary for success.

➤ HOUSEWIVES who expect to save labor by home food dehydration will be disappointed for it saves food and not labor, George W. Kable, editor of *Electricity on the Farm,* told the meeting of the American Society of Agricultural Engineers in Lafayette, Indiana.

Both canning and freezing require less labor and equipment. But dehydration is common kitchen talk throughout the country since other methods of food preservation are limited by the war and since dehydrated foods are used by the armed forces.

Dozens of bulletins have been issued and no less than forty manufacturers have indicated that they would like to build home food dehydration equipment. Materials have already been set aside to build 100,000 electric units this year.

Leading commercial food processors are also interested in home dehydration, Mr. Kable pointed out, and with good reason. They have invested more than $100,000,000 in the industry, it is reported, to dehydrate upwards of two billion pounds of foods for the armed forces and lend-lease this summer.

"When the war is over they expect to sell dehydrated products to the public," he explained, "and they want to see to it now that the public taste for dehydrated foods is not ruined by poor products coming out of kitchen dehydrators."

Some of the well-designed small dehydrators have produced dried foods equal to commercial products in quality, but Mr. Kable warned that the same intelligent care in handling before and during drying is as necessary as with commercial size units.

"Whether housewives are pleased with their home dehydrated products next winter will depend as much or more on how well they have learned and followed the correct procedures in dehydrating as on the drier they use to remove the moisture."

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Greater Farm Yield Needed

➤ IN HIS ADDRESS as president of the American Society of Agricultural Engineers, Prof. H. B. Walker of the University of California Agricultural College expressed satisfaction at the government's policy of permitting more farm equipment to be manufactured, as a means for obtaining higher yields for the furtherance of the war effort.

Greater production, however, does not call for plowing up more acres, the speaker pointed out:

"While the agricultural policies of our nation during a decade or more, based as they were on a program of scarcity, have contributed to some loss in potential productive capacity, and a greater dependency upon food imports, this fact is evident, that at the moment we have no real need for added farm land area. The problem today is to provide the facilities to get the most from the land already available. This is basically a simple problem, even though it may be difficult of attainment in wartime."

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Engineering Training Given

➤ MORE than a million young men and women have received special training in engineering, scientific and technical subjects, to fit them for specific tasks in the armed services and in the nation's industrial war effort, Dean A. A. Potter of the Purdue University engineering department told the meeting of the American Society of Agricultural Engineers.

This does not mean, however, that we have added a million engineers to our professional ranks. The courses given are to a large extent below college level, are designed specifically for particular ends, and do not lead to degrees.

"It is to be hoped," Dean Potter added, "that the experience which our engineering colleges have gained through the war training programs will be capitalized by them during the post-war period, not only in improving their regular programs of study leading to degrees, but also in establishing a large number of technical institutes all over the country with intensive practical programs closely linked to the needs of the industries in the communities."

There is an extreme need, Dean Potter continued, for fully trained engineers, which is not being met by the present regular programs of the engineering schools. The National Roster of Scientific and Specialized Personnel estimates that 40,000 to 50,000 additional engineers will be needed during 1943 and that the potential college production during the current academic year is only 17,000.

Intensive efforts are being made to close the gap, which the speaker described. Thousands of young men in V-1 and V-7 classifications are being given special courses in a number of colleges, under Navy and Army auspices, and they will be given V-12 classification and assigned to continue their studies on completion of the preliminary courses. By streamlining the professional curricula, and by cutting vacations to a minimum, it is expected that a new supply of well-trained engineers can be brought out in much less than the conventionally required time.

One hitch looms: unless the present Selective Service regulation on deferment is changed to extend the period beyond July 1, 1945, "a serious gap in the continuity of supply of engineers will develop very shortly. In general, the needs of our war industries will not be fully satisfied unless an 'industry reserve' or some other scheme is set up . . . for the purpose of insuring an adequate supply of engineers."

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A New England *shipyard* with 26,000 employees has among them approximately 2,600 women doing work ordinarily done by men.

RADIO

Radio-Noise Filters For Use in Aircraft

➤ COMPACT, LIGHTWEIGHT, radio-noise filters, developed for use in aerial navigation, were described at the meeting of the American Institute of Electrical Engineers in Cleveland, Ohio, by C. W. Frick and S. W. Zimmerman of the General Electric Company.

The filters give excellent noise suppression, especially from 200 to 20,000 kilocycles, mounted in any position and operating over a wide temperature range. The new filters comply with U. S. Army Air Forces specifications, including the requirements for vibration and acceleration.

"Careful planning is necessary to get the fullest use from both power and radio equipment, and not overburden the aircraft with attachments solely to make the radio work," the engineers stated. As electricity is used for engine ignition, lighting, and many other purposes as well as for radio, the probability of interference with radio reception is high. These filters help provide the high-fidelity radio reception necessary in aerial warfare.

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GEOLOGY

Geologists Aid Army in Locating Water Supplies

➤ MOST IMPORTANT MINERAL resource in this war is not iron ore for steel production, bauxite for aluminum or sulfur for explosives. By far the most important mineral is water: water, for the drinking, cooking and washing needs of armed men and war workers; water, for the thousand industrial processes that turn out the weapons and munitions of war.

New water sources by the hundreds have to be found for Army camps, for new war-industries sites, for the mushrooming towns that spring up around them. Finding them has been the job of the nation's geologists, states Dr. O. E. Meinzer of the U. S. Geological Survey. The work has been done by field men of the Survey itself, by the various state geological surveys, by geologists in the Army Engineer Corps, in universities and in private practice.

In 1942 alone, the U. S. Geological Survey made reports on groundwater at about 900 places for Army and Navy establishments and for war industries, reports Dr. Meinzer in *Economic Geology* (June-July). Ten geologists from the Survey have already been commissioned as Engineer officers and detailed to the search for water. One of them, Maj. R. C. Cady, has already died in service overseas as a result of accidental injuries. Some of the remaining nine have already rendered great assistance in locating water in North Africa, where it is always critically needed; the others are serving in water supply battalions in this country.

Science News Letter, July 3, 1943

CHEMISTRY

Girls Assisting in Research on War Gases

➤ DANGEROUS GASES, corrosive chemicals and deadly liquids are handled daily by a group of girls, most of them hardly out of their teens.

Working without the glamour of military uniform, clothed in laboratory coats, with faces protected by transparent masks, often wearing grotesque gas masks and thick rubber gloves, this scientific group works long hours at the Chemical Warfare Service Laboratory at the famous Massachusetts Institute of Technology. These girls are helping to develop new methods of chemical defense and offense, an important part of the War Department's scientific warfare. Many of these girls recruited from local schools and colleges are filling scientific and technical jobs that traditionally have been held by men.

War Department officials, in announcing the important services of these feminine scientists, praised also their "ability to say nothing about their work when off the job." Like other soldiers, they keep their mouths shut about what they are doing to help win the war.

Titrating, weighing, distilling, and carrying out new chemical processes, these girls help rush experiments to meet any eventualities of chemical warfare. Others in the group build optical instruments, operate testing machines and construct delicate apparatus that can be seen only through the use of a microscope. The Chemical Warfare Service's feminine scientists are always alert to the danger of breaking flasks and spilling acids. Chemical Warfare Service officials state that the girls accept the hazards of their jobs as their part in the war effort and do not balk at working with dangerous gases, deadly liquids, and penetrating acid compounds.

Science News Letter, July 3, 1943

IN SCIENCE

INVENTION

Harvester for Sea Moss Awarded U. S. Patent

➤ ONE OF the oddest harvesting machines ever devised is protected by patent 2,320,283, obtained by three Massachusetts inventors, E. R. Knowlton of Rockport, G. F. Doucette of Gloucester and J. W. Eager of Fitchburg. It is intended to operate on the sea bottom and its harvest is to be sea moss. Sea moss, or carrageen, is a low-growing, bunchy kind of seaweed, valued for certain medicinal and food uses. It is usually pulled up with long-handled, rake-like implements; but this treatment hurts its market value by tearing the bunches. The three inventors have devised a rotating circular cutting device that will detach the growth with a minimum of tearing. This operates in conjunction with a suction pipe that brings them up to the harvesting barge.

Science News Letter, July 3, 1943

GEOLOGY

Fossil Specimen Similar To Ferns Growing Today

➤ A HUNDRED-MILLION-year-old fossil specimen of a genus of ferns that still live in marshy woods of the eastern United States, that throve when dinosaurs still roamed the earth, has been discovered in a Wyoming shale deposit, and is given scientific description in the *Journal of the Washington Academy of Sciences* by Dr. Roland W. Brown of the U. S. Geological Survey.

The plant is one of the very few members of the fern group that is a vine. Its thin, wiry stems clamber in masses over shrubs and brush heaps in the woods today, and presumably did also in remote Cretaceous times when it grew in the West. Leaves of both living and fossil species are shaped like little hands; the extinct species having about four fingers, the living one as many as seven.

Dr. Brown has given his newly discovered fossil fern the scientific name *Lygodium pumilum*.

Science News Letter, July 3, 1943

E FIELDS

PHYSICS

Divergent Beam Used In Taking X-Ray Photographs

➤ A DIVERGENT BEAM has successfully been used in taking X-ray photographs of crystals. This method promises to be extremely useful in studying the arrangement of atoms in the crystal. As a short exposure is required, it will aid particularly in research with short-lived crystals.

This new development in X-ray photography, reported by the British Council, was made at the Royal Institution, London, by Dr. Kathleen Lonsdale with a tube designed by Dr. A. Muller.

When the planes of atoms in a single crystal reflect a fine X-ray beam, the reflected beams photograph as sharp black spots on a light background. Substituting a divergent beam for the usual cylindrical pencil, the background becomes darker and the former spots open out into curves.

Besides the reflection curves, which are black, the photograph shows "deficiency" curves. These lines are lighter than the general background because radiation in certain directions has been removed from the original beam.

Science News Letter, July 3, 1943

AERONAUTICS

Wind Holds Important Roles In Launching Planes at Sea

➤ WIND has become an important factor in naval warfare, as it was in the days of sailing ships though for a different reason, Lt. Comdr. William C. Chambliss, U.S.N.R., points out (*U. S. Naval Institute Proceedings,* May).

In the old days, admirals maneuvered their fleets to the windward of their enemy if they could, because this "weather gage" gave them greater freedom of movement when the moment came to close battle. Now the situation is reversed: it is better to be to the leeward of the enemy because a direct head wind helps greatly in getting planes launched from, and landed on, the flight deck of an airplane carrier.

The most exasperating thing that can happen to a carrier, Comdr. Chambliss points out, is to have a light wind dead astern. The fleet may advance to meet the enemy, but when the time comes to launch the planes the carrier has to turn around and run away from the scene of impending battle just as fast as she can go, until her planes are up. By that time she may be almost back to where she started from.

That this is not at all an imaginary situation, Comdr. Chambliss shows by a most crucial example. In the Solomons, our ships must steam toward the northwest to find and fight the Japs. The wind in that region blows almost incessantly from the southeast. This favors Japanese carriers and handicaps our own.

Science News Letter, July 3, 1943

ENGINEERING

Navy Getting "Dieselized" Under Pressure of War

➤ THE U. S. NAVY, under pressure of war, is undergoing a "revolutionary process of dieselization," Capt. Lisle F. Small declared before the meeting of the Society of Automotive Engineers in Cleveland.

At the end of World War I, he said, the Navy had diesel engines only in submarines, and the total horsepower of all of them was only 150,000. Now, diesels are "chunging" away to the total tune of 12,000,000 horsepower, on craft of all kinds ranging from the mighty 45,000-ton Iowa down to the humblest tugboat.

There has been a progressive slimming down of pounds per horsepower, as new types of diesels evolved, Capt. Small told his audience. In 1918, the engines of most of our submarines weighed 66 5 pounds per horsepower. The big diesels in the German pocket battleship Von Spee, destroyed by her own commander in the mouth of the Plate river early in the war, had got the weight down to 28 pounds per horsepower.

Among the factors that have made for success in American use of diesel engines, Capt. Small attributed much importance to two: the familiarity of most American boys with internal engines through their everlasting tinkering with automobiles, and the far-sightedness of several of the diesel construction firms in establishing special schools for the training of diesel operators and service men.

Science News Letter, July 3, 1943

MEDICINE

National Cancer Institute Director Is Retiring

➤ RETIREMENT of Dr. Carl Voegtlin as director of the National Cancer Institute, U. S. Public Health Service was announced at the meeting of the National Cancer Advisory Council.

Dr. Voegtlin, who has been director of the Institute since its founding in 1938, is retiring because of age. He will be 64 next July 28. At the Council meeting he was presented with a portrait of himself.

Before taking over as director of the National Cancer Institute, Dr. Voegtlin had been chief of the division of pharmacology in the National Institute of Health. He came to that division of the U. S. Public Health Service in 1913 from Johns Hopkins Medical School, where he had been associate professor of pharmacology.

Born in Switzerland and educated in the Universities of Basel, Munich, Geneva and Frieberg, Dr. Voegtlin has had a distinguished career, and an international reputation for his researches in physiology, pharmacology and cancer.

Science News Letter, July 3, 1943

PSYCHOLOGY

Problem, Normal Children Reason About the Same Way

➤ PROBLEM CHILDREN and normal children reason in just about the same way, a study of 606 seven- to nine-year-olds showed Dr. Myrtle Luneau Pignatelli of New York University's School of Education. So when Johnnie becomes unmanageable, it can't be blamed on the way he thinks. (*Genetic Psychology Monographs*).

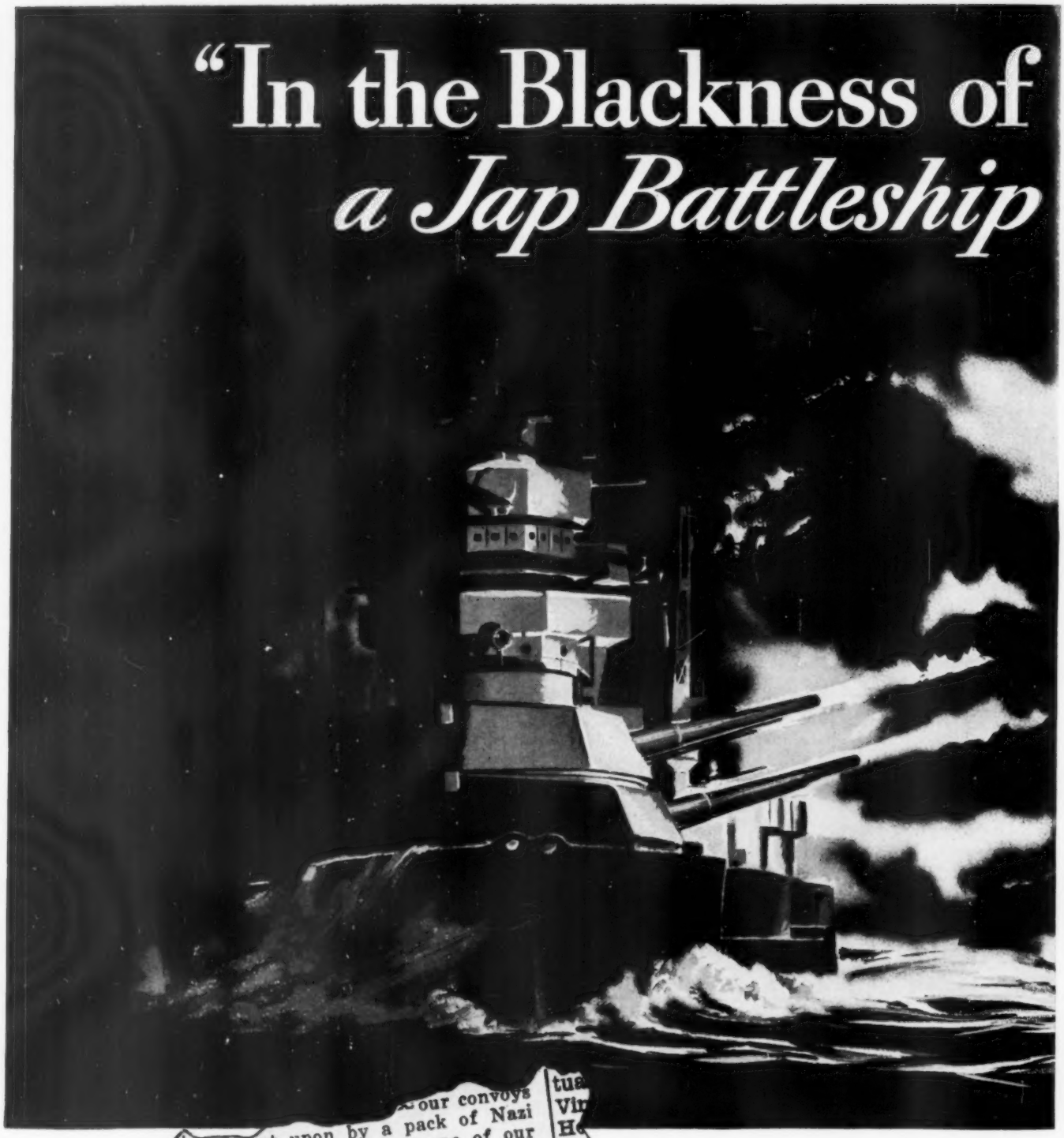
Dr. Pignatelli matched the problem children she studied with children of normal behavior having the same average chronological age, mental age and I.Q. The 1916 Stanford-Binet Intelligence Test was used in examining both groups.

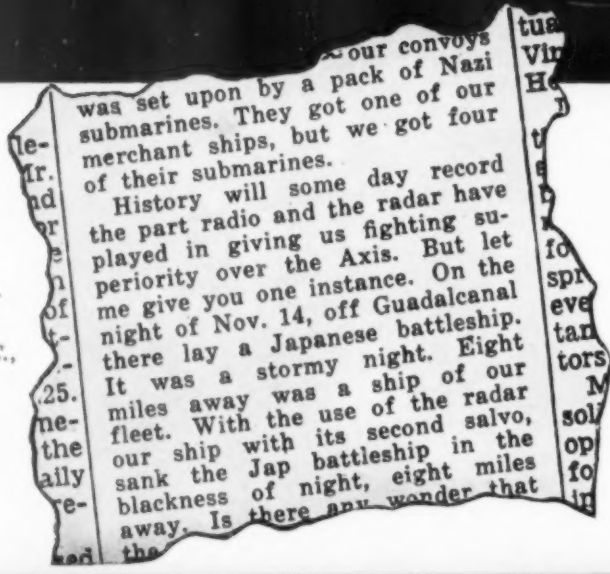
Problem children tend to be just a little better on the use of language in description, she found; normal children are a little better in memory span and vocabulary. But the differences are so small as to be insignificant.

A child's mental development, Dr. Pignatelli concluded, is like his physical growth. It is not susceptible to the vicissitudes which come with failure to make social and emotional adjustments.

Science News Letter, July 3, 1943

"In the Blackness of *a Jap Battleship*





...our convoys was set upon by a pack of Nazi submarines. They got one of our merchant ships, but we got four of their submarines.

History will some day record the part radio and the radar have played in giving us fighting superiority over the Axis. But let me give you one instance. On the night of Nov. 14, off Guadalcanal there lay a Japanese battleship. It was a stormy night. Eight miles away was a ship of our fleet. With the use of the radar our ship with its second salvo, sank the Jap battleship in the blackness of night, eight miles away. Is there any wonder that

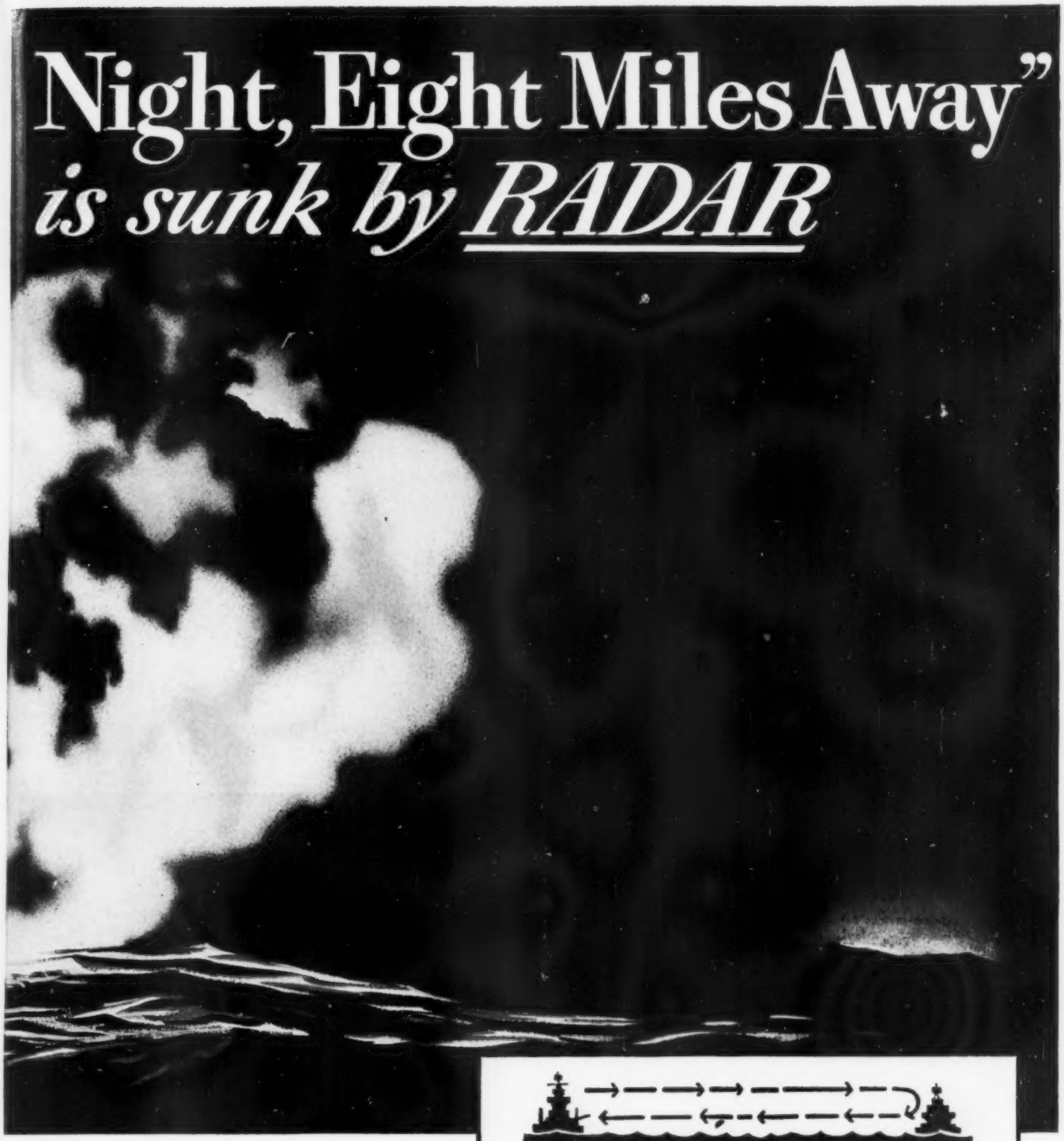
EXTRACT *from address by James F. Byrnes, Director of War Mobilization, at Spartanburg, S. C., May 31, 1943, broadcast over the Blue Network.*

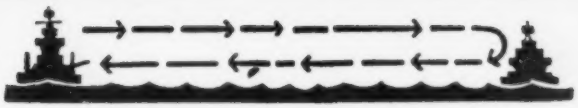
Radar principles were first applied to aviation by RCA through equipment built and installed in its own plane in 1937, in connection with a study of collision prevention.

In 1938, RCA built an experimental Radar installation for the U. S. Navy. As the result of tests, in October, 1939 the Navy placed with RCA its first order for service Radar equipment. Since then, vast strides in the development of Radar in RCA Laboratories

RADIO

Night, Eight Miles Away" *is sunk by RADAR*





HOW RADAR WORKS—Traveling with the speed of light—186,000 miles per second—ultra-high frequency waves strike the invisible enemy vessel, bounce back, automatically establish range and distance of the target!

For the full, fascinating story of Radar, write today for free booklet, "Radar—Wartime Miracle of Radio." Address your request to: Department AS, Radio Corporation of America, 30 Rockefeller Plaza, New York.

have been made available to all branches of the industry producing Radar.

Radar is another achievement of the radio-electron tube and the use of ultra-high frequency waves, pioneered by RCA Laboratories. RCA looks forward to the time when its services as world headquarters for radio-electronic research can again be devoted to making the peacetime world a better place in which to live.

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NUTRITION

Rationing

Nutritionist proposes new system of rationing under which a definite portion of income would be paid in ration stamps for buying essential foods.

By DR. FRANK THONE

➤ DOES point rationing give you a headache? Are you bewildered and weary, trying to do your buying with what amounts to two kinds of currency that have no essential connection—pennies and points? Do you find yourself with plenty of cash to pay for something you want, only to find that you are "broke" in your other pocket, the one where you keep your ration book?

Rather common annoyances, these. If we didn't know that it is necessary for us to share certain scarce commodities with each other, and with our fighters and allies overseas, we'd consider this dual system of purchasing quite intolerable.

How would you like to have the whole business simplified by getting part of your income in ration stamps, good by themselves for the purchase of certain specified necessary foods, and the rest of your salary in cash, to spend as you please for luxuries on an unrestricted list?

Something like this is suggested as a means for seeing that the whole nation is adequately fed, by Dr. Mark Graubard, biochemist especially interested in matters of nutrition. For the duration, he is serving the government in the Food Distribution Administration, in charge of labor education in the Nutrition and Food Conservation Branch.

"There are seven general classes of foods that can be called really essential," Dr. Graubard told me when I talked to him about his proposal. "Because of their vitamin and mineral contents, their proteins, fats and carbohydrates, everybody should regularly eat some of each class. You don't stay healthy if you neglect any one of the seven.

"Staying healthy is a duty that we owe to ourselves, and to the nation as well. The war emergency has made us realize that; and the duty to the nation will still remain when peace returns. The nation has a vested interest in the health of its citizens, a right to insist that they shall not clutter up clinics and hospitals and lose valuable production time through preventable ill health."

"Can you give me a list of these health-keeping foods, Dr. Graubard?"

"Sure, I'll tell you. Better yet, I'll jot down typical examples."

So here is Dr. Graubard's classified list:

1. Yellow and green vegetables.
2. Oranges, tomatoes, grapefruit, raw cabbage.
3. Salad greens, potatoes, other vegetables and fruits.
4. Milk and milk products.
5. Meat, poultry, fish, eggs.
6. Bread, flour, cereals.
7. Butter or fortified margarine.

"Now, to get proper distribution and use of these seven classes of foods, my suggestion is that each earner have, say, a fifth or a sixth of his income withheld at the source, the money going into a Food Supply Fund. In return for this, each person is to be given coupons, like ration cards, in accordance with the size of the family.

"Coupons are to be printed in seven colors, each color being good for purchase of foods in one of the seven classes, but not good outside that class, and not good for the purchase of unrationed, luxury commodities.

"The rest of the income is to be received in cash, as heretofore, and used

RATIONING FOR ABUNDANCE—An inviting lunch like this or a wholesome dinner can be available to all, but only with wise rationing.

★★★★★★★★★★★★★

WYOMING

Yes, even THIS summer you may fish in its mountain streams, ride horseback through its hills and canyons, find Indian relics and marine fossils in a region of great historical and geologic interest.

The Patons welcome a limited number of guests at their ranch in the Big Horn country. They offer plenty of ranch grown food, comfortable cabins and gentle horses. May they tell you more? Write:

Paton Ranch, Shell, Wyoming

in payment for clothing, housing, taxes and other non-food necessities, and for luxury foods such as candy and cake, coffee and tea, beverages, tobacco and so on.

"I think a scheme of this kind would insure the proper nutrition of everyone, would bear very lightly on each person's income, and would leave a maximum proportion for unrestricted spending."

"How would these essential foods be distributed, Dr. Graubard — through special government stores?"

"My gracious, no! Don't get this suggestion of mine mixed up with socialistic ideas. It's intended to function through the regular wholesale and retail set-up we now have, with people shopping around with their seven-colored coupons just as they now do with the combination of cash and ration books, only it would not be so complicated. Stores would continue to compete in prices, quality, service, just as they do at present. The only intervention by the state would be in the nature of currency control—and that of course is already a function of the democratic-capitalistic state in which we live."

"Just the same, Dr. Graubard, I think this idea of yours is bound to be shot at. A lot of people I know would instantly denounce it as paternalistic."

Expects Discussion

"Oh, I'm quite sure it'll be shot at. In fact, that's what I'm putting it up for: discussion, even vehement discussion, is an accepted democratic method of going over a new idea and testing its acceptability. Moreover, I haven't any conceit that I've produced anything finished and perfect, all ready to put into operation. I'd like to have other people's ideas on it.

"This is the first time I've talked for publication, but I have discussed the proposal privately with quite a number of people. Some of them just can't see it at all; others, including a good many who consider themselves quite conservative, think it's worthy of really serious consideration. Some of them point out that in addition to its primary objective of insuring adequate national nutrition it would also be a powerful aid in stabilizing business, assuring the farmer of a market for his crops. If the idea could be given international extension it should be a powerful influence for peace.

"Of course, what I've been telling you just now is only a rough outline. I'm putting it down in greater detail in a chapter of a new book I am writing. That should enable anyone who is really interested in the idea to get a more complete view of it, which will serve as a basis for full discussion."

Science News Letter, July 3, 1943

The liver of the *swordfish* has a high vitamin A content.

Canada is the fourth largest producer of war supplies among the United Nations.

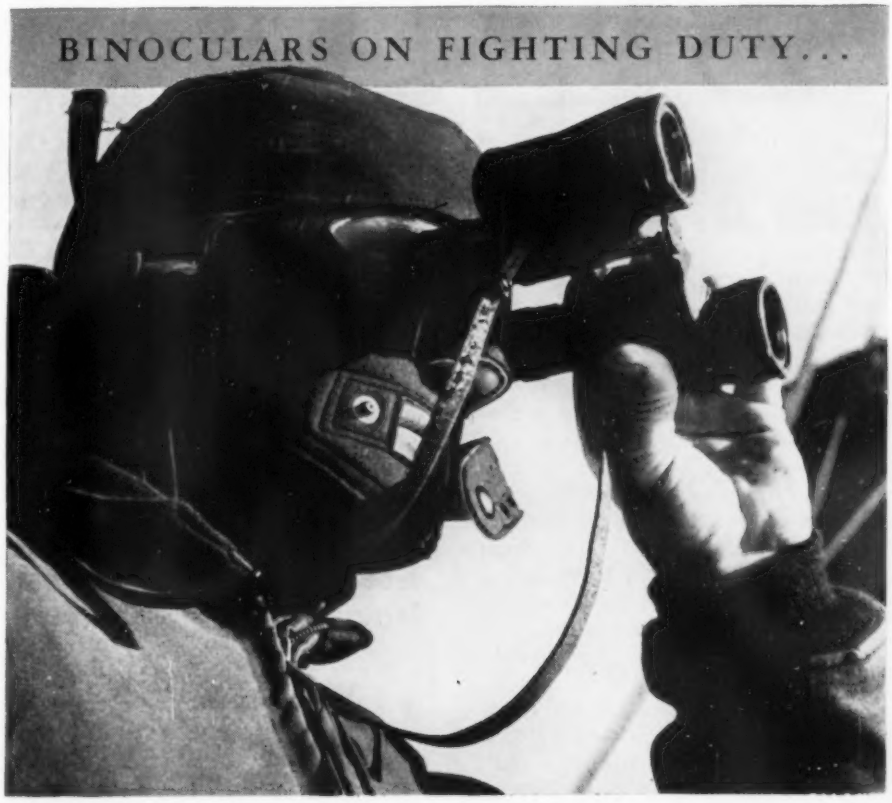
Thirty dozen *eggs* in their shells require 2.5 cubic feet of space; 30 dozen powdered eggs require .38 cubic feet.

● RADIO

Saturday, July 10, 1:30 p.m., EWT

"Adventures in Science" with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. W. H. Tisdale, Pest Control Research Section of E. I. du Pont de Nemours and Co., will speak on "Agricultural Research."



"*Conning Tower!* Broad on the Starboard Beam"

Pete Manning, ship's lookout, knows that sharp, brightly illuminated image means a Jap sub—preparing to attack his precious cargo of war materials. Now the entire convoy goes into action to fend off this steel shark—warned in time—because a man's trained eyes can reach miles across the water and sight a shaft of steel above the waves.

Producing binoculars, the world's finest in performance, is only one of the wartime jobs at Bausch & Lomb. Because this war is so clearly an "optical" war, the other sighting instruments—range finders, anti-aircraft height finders and gun telescopes—are also pouring out of the Bausch & Lomb factories in tremendous quantities. Today on many fronts Bausch & Lomb is devoting the "know how" learned through years of precise optical production to the preservation of American freedom.

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ORNITHOLOGY

NATURE RAMBLINGS

by Frank Thone

Vanishing American

➤ AMERICANS who want to get a glimpse of the great bird that figures in our national heraldry must content themselves with caged specimens in the zoological gardens, unless they happen to live in a few favored spots, mostly near the seacoast. From the interior of the country, where the bald eagle was once abundant, it has vanished practically altogether.

Greatest numbers of eagles are now to be found along the coasts and up the rivers of Alaska, continuing southward through British Columbia and down into Oregon. There are not many in California, and relatively few in the Rockies.

On the Atlantic coast there is a considerable concentration near the mouth of Chesapeake bay, and another in Florida, with smaller numbers scattered between and extending along the Gulf coast to Louisiana and eastern Texas.

But along the great inland waterways, the Ohio and the Mississippi and their larger tributaries, where Audubon, in his travels a little over a century ago was hardly ever out of sight of an eagle's nest, you will search the skies in vain for a sign of one.

The extinction of the bald eagle throughout so large a part of its former range was due to only a minor extent to outright killing by white men. To be sure, there have been very bad spots here and there, as in the long-standing bounty paid by the Territory of Alaska, on the theory that eagles were harming the fisheries, now happily repealed. Indians, too, must take some of the blame for the killing of eagles, for eagle plumes are the only acceptable feathers for the ornate war bonnets highly prized by the braves—and now commercialized to a considerable extent for rodeo purposes.

However, on the whole the disappearance of the eagle has been a result of the advance of agriculture and the growth of industrial cities. Despite romantic notions that eagles build their nests only on inaccessible cliffs, many, perhaps a majority, built in towering trees near the rivers that supplied them with fish, their principal food. This was certainly so in the great central valley. So when the timber was cleared it was inevitable that the eagles had to go.

Moreover, the cities grew and befouled the rivers with sewage and industrial wastes; the once teeming fish population vanished. With their main source of supplies thus taken away, it was only natural that the eagles should vanish, too.

Science News Letter, July 3, 1943

AGRICULTURE

Treatment of Seed Pieces May Help Potato Shortage

➤ POTATO growers in parts of the country where length of season permits two crops a year to be produced are having difficulty in obtaining enough seed potatoes to put in the second crop. For their benefit, Dr. R. A. Jehle, state plant pathologist at the University of Maryland, suggests possible use of seed pieces from this year's early crop, chemically treated to induce them to sprout without waiting through the rest period usually required by seed potatoes.

The treatment, first developed at the Boyce Thompson Institute for Plant Research in Yonkers, N. Y., consists in soaking the cut seed pieces for an hour in a solution of sodium thiocyanate, one pound of the chemical to 12 gallons of water. It is essential that the seed potatoes have a cut surface; whole ones will not respond.

Planting such treated pieces is not as satisfactory as the use of seed potatoes that have been in storage for a normal period of time; germination of several varieties tried was only about half as high as that of stored seed potatoes. However, Dr. Jehle points out, it may well be considered justified in the present emergency.

Science News Letter, July 3, 1943

AGRICULTURE

Species of Hops Crossed To Produce Better Beer

➤ BETTER BEER and ale can be expected from recent crosses of European and American species of hops, accomplished for the first time at South-Eastern Agriculture College at Wye, Kent. Reports of success in developing five very promising new varieties has just been received from the British Council; the hops themselves have been planted in this country and Canada, as well as in England.

Acceptance for commercial propagation of the new varieties, which are disease-resistant as well as superior in flavor, represents the culmination of more than a third of a century of patient improvement breeding initiated by Prof. E. S. Salmon, and continued under the leadership of Dr. R. G. Hatton, Jesse Amos and F. H. Beard.

Science News Letter, July 3, 1943

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• New Machines and Gadgets •

❁ *MEASURING the soldier's feet more quickly and accurately by a new device results in better fits of GI shoes. Less than 10 seconds are required to measure both feet.*

Science News Letter, July 3, 1943

❁ *TEXTILE fabrics that are warp or circular knit will be better and more resistant to shrinkage and stretch through use of a new type of drum dryer for drying and finishing, the manufacturer reports.*

Science News Letter, July 3, 1943

❁ *WAVE METERS, intricate instruments to check wave lengths of radio transmitters, now contain self-compensating devices to insure accuracy of the transmitters when subjected to rapid temperature changes. These devices are thermostatic controls somewhat similar to those used in automatic heating in homes. They are particularly valuable in aircraft.*

Science News Letter, July 3, 1943

❁ *FEATHERWEIGHT, compact radio transformer cores designed for war communications duty require only half the nickel and a tenth the copper formerly used. A workman is shown cutting ribbons of the special silicon steel which is responsible for the conservation and light weight.*

Science News Letter, July 3, 1943

❁ *A NEW ROTOMETER is more sensitive and easier to read than former instruments. It measures the rate of flow of liquids or gas through a conductor.*

Science News Letter, July 3, 1943

❁ *NEW ARMY bugles, made of a cellulose acetate plastic, are reported to be as good if not better than their metal predecessors. They are lighter in weight, give clear and true notes and have about the same carrying power.*

Science News Letter, July 3, 1943

❁ *ELECTRIC water coolers, developed through a series of tests simulating conditions on shipboard during stormy ocean weather, are being constructed for use on transport vessels to supply troops with suitable drinking water.*

Science News Letter, July 3, 1943

❁ *AN AIR-LESS fabric auto tire recently patented is composed of a great many cotton fabric pieces placed so that it runs on the ends of the fabric.*

Science News Letter, July 3, 1943

❁ *AN AUTOMATIC telephone dial operator has recently been patented. With it, an unlimited number of telephone numbers may be automatically dialed. It has a keyboard with individual keys, which are depressed to dial the numbers corresponding to the keys.*

Science News Letter, July 3, 1943

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington, 6, D. C., and ask for Gadget Bulletin 163.*

ENGINEERING

Weight-Lifting Injuries Avoided by Wise Handling

➤ BOTH THE science and the art of weight-lifting should be studied by foremen and supervisors in factories and shops, and also by farmers and men in construction work. Strains, sprains, and hernia constitute about one-quarter of all industrial accidents, according to good authority. One-half of these accidents are caused by lifting and carrying weights.

Back strains caused an average time loss of 19 weeks per person per injury, in one state where a study was made. A hernia, it was found, usually lays a worker up for about eight weeks. Other disabilities often occur from over-lifting, such as the dislocation of joints and the fracture of bones.

Lifting the wrong way, and lifting by persons physically incapable of raising heavy weights with safety to themselves, are two of the most frequent causes of weight-lifting accidents, according to the U. S. Department of Labor, which has had a study made of this matter. It recommends to management an analysis of all lifting and carrying jobs, the installation of mechanical lifters and conveyors where desirable, and the control of individual efforts in keeping with their strength.

Women as a rule should not be required to lift more than one-half the safe weight for a man.

Many back strains result from raising an object from the floor by bending the back over it, and lifting with the back and abdominal muscles by straightening the body. The proper way is to spread the feet, bend the knees, and lift with the leg muscles and the shoulder muscles.

Science News Letter, July 3, 1943

GENERAL SCIENCE

Old Glory Is Hoisted Over Naval Research Laboratory

See Front Cover

➤ HOME OF RADAR, the U. S. Naval Research Laboratory, is celebrating its twentieth anniversary as you receive this copy of the SCIENCE NEWS LETTER. It was founded on July 2, 1923.

The illustration on the front cover shows the United States flag being hoisted into place with due ceremony by U. S. Marines. With the use of this timely photograph, SCIENCE NEWS LETTER joins other magazines of the nation in giving prominence to our nation's flag in celebration of Independence Day, July 4, of this war year.

Science News Letter, July 3, 1943

Dairying is reported to be America's largest industry; 26,000,000 dairy cows supply the materials.

MATHEMATICS DICTIONARY

Invaluable in reading any book that uses mathematics.

THE JAMES MATHEMATICS DICTIONARY, the only such book now published, provides standard definitions of the terms and phrases from arithmetic through elementary differential equations, the technical terms ordinarily used in the applications of these subjects, and more advanced basic terms. Easy examples, many illustrations and all sorts of formulas are included. The appendix contains tables of weights and measures, a list of mathematical symbols and the tables ordinarily used in handbooks.

This dictionary is a great deal more than a collection of definitions. It explains, illustrates and correlates, stressing especially those operations that are hardest to understand. One reader has called it "Ten texts in one."

Available in either flexible or non-flexible, blue fabrikoid binding, for $3.00, from the Digest Press, Van Nuys, California, or Science News Letter.

First Glances at New Books

➤ ENTERTAINING AND TIMELY is this biography of a great American Army doctor, WALTER REED: DOCTOR IN UNIFORM, by L. N. Wood (*Messner,* $2.50). Those readers who know Walter Reed only for his role in the conquest of yellow fever will be interested in his other medical activities and in the many incidents of his personal life.

Science News Letter, July 3, 1943

➤ CHELONIAN ACQUAINTANCES, principally of the box and wood species have been carefully cultivated by Mrs. Josephine Gibson Knowlton. Hence it comes to pass that her limited-edition book, MY TURTLES, contains an astonishing array of biological facts about these shelly citizens that are not to be found in even professional works on the subject. These details are served up with an entertaining seasoning of anecdote about the more outstanding personalities in the group. The one named Virginia, for instance; she nonchalantly gets up on her hind legs to reach for things beyond her ordinary reach. There are many superb photographic illustrations. (*Author,* Washington, D. C.; $15).

Science News Letter, July 3, 1943

➤ THE AIR MINISTRY'S thrilling story of the planes and fliers that constitute a powerful offensive-defensive arm of the long-beleaguered but now counter-attacking island that is "Fortress Brittania" is told in COASTAL COMMAND (*Macmillan,* $1.50). Beginning with the hunting of the *Bismarck,* there's stuff for a score of sea sagas in this thinnish book.

Science News Letter, July 3, 1943

➤ FLEAS, practically alone among ectoparasites, are often treated jocularly. But they really aren't funny: at best, they cause discomfort and loss of flesh to domestic animals, at worst they may be vectors of dangerous diseases. Timely and useful, therefore, is the appearance of a new government bulletin, THE FLEAS OF NORTH AMERICA, by H. E. Ewing and Irving Fox (*Supt. of Documents,* 20c), which gives correct technical descriptions of known species.

Science News Letter, July 3, 1943

➤ MOLDS mean spoiled stuff to most of us at first thought; but we could have neither bread nor beer, cheese nor calcium gluconate, without the assistance of the lower fungi. The usefulness of the compact textbook, AN INTRODUCTION TO INDUSTRIAL MYCOLOGY, by George Smith and Harold Raistrick (*Edw. Arnold,* $6), now in its second edition, is therefore well assured.

Science News Letter, July 3, 1943

➤ LATIN AMERICAN PEOPLE, their country, customs and mannerisms are interestingly and vividly portrayed in ECUADOR (*Doubleday, Doran,* $3.50) by Albert Franklin, a man who spent much time there and knows the topography, resources and the various peoples. This book is informative and entertaining.

Science News Letter, July 3, 1943

• Just Off the Press •

AIRCRAFT ELECTRICAL SYSTEMS—William F. Jorch—*Ronald Press,* 208 p., illus., $3. Price correction.

ANNUAL REVIEW OF PHYSIOLOGY—James Murray Luck and Victor E. Hall, editors—*Am. Physiological Soc.* and *Annual Reviews Inc.,* Vol. 5, 613 p., $5.

THE BIOTIC PROVINCES OF NORTH AMERICA—Lee R. Dice—*Univ. of Mich. Press,* 78 p., $1.75. "An experiment in classifying the major ecologic divisions of the continent."

THE CHEMISTRY OF LARGE MOLECULES—R. E. Burk and Oliver Grummitt, editors—*Interscience Publ.,* 313 p., illus., $3.50. Frontiers in Chemistry series, Vol. 1. Published under auspices of Western Reserve University.

COLLEGE PHYSICS ABRIDGED—Henry A. Perkins—*Prentice Hall,* 591 p., illus., $4, rev. ed.

COMPANY MUSEUMS—Laurence Vail Coleman—*Amer. Assn. of Museums,* 173 p., $2.50.

THE FARM BLOC—Wesley McCune—*Doubleday, Doran,* 278 p., $2.

A FIVE-YEAR PEACE PLAN: A Schedule for Peace Building—Edward J. Byng—*Coward-McCann,* 184 p., $2.

THE FLOWER ENCYCLOPEDIA AND GARDENER'S GUIDE—Albert E. Wilkerson—*Garden City Pub. Co.,* 524 p., illus., 69c. Information on flowers and flower gardening and a guide for the home gardener.

MALACOLOGICAL NOTES—III—Fritz Haas—*Field Museum of Nat. Hist.,* 21 p. illus., 30c. Zoological series, v. 29, no. 1.

A MANUAL OF MECHANICAL MOVEMENTS Will M. Clark, ed. *Garden City Pub. Co.,* 254 p., illus., $1.98.

MARINE PLANKTON DIATOMS OF THE WEST COAST OF NORTH AMERICA—Easter E. Cupp—*Univ. of Calif. Press,* 237 p., illus., $2.50. Bulletin of The Scripps Institute of Oceanography of The Univ. of California.

MY TURTLES—Josephine Gibson Knowlton—*Caslon Press,* Washington, D. C., 222 p., $15.

PREPARE YOURSELF: Physics Experiments With Practical Applications—Lawrence F. Tullen, George S. Porter and Arthur Houston—*Scott,* 298 p., illus., 96c.

PUBLIC AFFAIRS PAMPHLETS—Rebuilding Europe After Victory—Hiram Motherwell—*Public Affairs Comm.,* No. 81, 32 p., illus., 10c.

THE SCIENTIFIC LIFE—John R. Baker—*Macmillan,* 154 p., $2.50.

SHRUBS AND TREES FOR THE SMALL PLACE—P. J. Van Melle—*Scribner*—298 p., $2.50.

SMOKE STREAMS: Visualized Air Flow—Charles Townsend Ludington—*Coward-McCann,* 144 p., illus., $2.75.

A TEXTBOOK OF ANATOMY AND PHYSIOLOGY:—Jesse Feiring Williams—*Saunders,* 573 p., illus., $2.75, 7th ed.

THE UNION OF SOUTH AFRICA—Lewis Sowden—*Doubleday, Doran,* 271 p., $3.

THE UNITED NATIONS—The Booklist, v. 39, no. 18—*Amer. Lib. Ass'n.,* 25c a copy, reduction in quantity.

THE WAR ON CANCER—Edward Podolsky—*Reinhold,* 179 p., $1.75.

WAR PLANES OF ALL NATIONS—William Winter—*Crowell,* 418 p., illus., $3. Specifications, photographs, and outline plans. Because of military security reasons some data are necessarily inadequate, but an effort was made to keep them as complete as possible.

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